REMARKS

Claims 1-77 are pending with claims 1 and 38 being independent. Claims 17, 19, 40, 42, 45, 52, 59, 61, 64 and 71 have been amended to correct minor errors. No new matter has been introduced.

Initially, applicant notes that it is unclear whether the present rejection is a final action. While the summary page indicates that the action is non-final, the remarks indicate that the action is final. In the event that this is a final action, applicant submits that the finality is improper since the action raises a new rejection that was not necessitated by claim amendments and the other rejections were the subject of pre-appeal that resulted in the re-opening of prosecution.

The claims have been rejected under section 101 as being directed to non-statutory subject matter. As the basis of this rejection, the Examiner asserts that the claims are directed to abstract ideas and do not result in a useful, concrete or tangible result. The Examiner further asserts that the end results of the method of claims 1 and 38 is to combine first signal samples with second signal samples, which the Examiner argues is not useful, concrete or tangible. Applicant respectfully disagrees.

First, the claims do not merely recite combining signal samples. Rather, they recite combining the signal samples "to produce a set of digital speech samples corresponding to the selected voicing state" in the context of a method of "synthesizing a set of digital speech samples corresponding to a selected voicing state from speech model parameters" (claim 1) or "to produce the digital speech samples for the subframe corresponding to the selected voicing state" in the context of a method of "decoding digital speech samples corresponding to a selected voicing state from a stream of bits" (claim 38). Thus, the signal samples are combined to produce a set of digital speech samples and, as such, the methods of claims 1 and 38 do not preempt abstract ideas.

Second, as evidenced by the industry that has developed around digital speech processing techniques such as are recited in claims 1 and 38, the results produced by the methods of claim 1 and 38 are certainly useful.

Accordingly, for at least these reasons, the claims are directed to statutory subject matter and the rejection under section 101 should be withdrawn.

Claims 1-6, 16, 27, 28, 37-41, 43, 44, 59, 60, 62 and 63 have been rejected as being unpatentable over Griffin (U.S. Patent No. 5,701,390) in view of Barnwell. Claims 7, 42, 45, 46, 49, 61, 64, 65 and 68 have been rejected as being unpatentable over Griffin in view of Barnwell and allegedly well known prior art. Applicant requests withdrawal of all of these rejections for the reasons presented in applicant's pre-appeal request for review. Applicant further notes that, though the pre-appeal resulted in the reopening of prosecution, the issues raised in the pre-appeal were not addressed in the new rejection, which merely repeated the previous rejection with minor modifications. As previously noted by applicant:

1. Griffin and Barnwell do not describe or suggest the subject matter of claim 1, which is directed to synthesizing a set of digital speech samples corresponding to a selected voicing state using first and second digital filters computed from first and second frames of speech model parameters.

Claim 1 is directed to a method of synthesizing a set of digital speech samples corresponding to a selected voicing state (e.g., voiced, unvoiced or pulsed) from speech model parameters. The method includes dividing the speech model parameters into frames that include pitch information, voicing information determining the voicing state in one or more frequency regions, and spectral information. First and second digital filters that have frequency responses that correspond to the spectral information in frequency regions where the voicing state equals the selected voicing state are computed using, respectively, first and second frames of speech model parameters. Then, a set of pulse locations are determined and sets of first and second signal samples are produced from the pulse locations and, respectively, the first and second

digital filters. The first signal samples are combined with the second signal samples to produce a set of digital speech samples corresponding to the selected voicing state.

Griffin (U.S. Patent No. 5,701,390), which is commonly assigned with the present application, is directed to a multi-band excitation ("MBE") system that, like claim 1, employs frames of speech model parameters that include pitch information, voicing information, and spectral information. However, Griffin does not describe or suggest the recited computing of first and second digital filters, or the recited use of the digital filters, along with pulse locations, to produce sets of first and second digital samples that are combined to produce a set of digital speech samples.

Applicant recognizes that the Examiner has modified the rejection to note that "it might be argued that the use of fundamental frequency information determines a set of pulse locations." However, even assuming for sake of argument that this is correct, this in no way changes the fact that Griffin nowhere describes or suggests the use of first and second digital filters, along with pulse locations, to produce sets of first and second digital samples that are combined to produce a set of digital speech samples.

Barnwell, which is a chapter from a textbook on speech coding that describes a pitch-excited linear predictive coder ("LPC"), also fails to describe or suggest the recited computing and use of first and second digital filters.

The rejection indicates that Griffin teaches computing first and second digital filters at Fig. 2 and col. 4, lines 38-65. However, that passage merely mentions that unvoiced frequency band components may be generated from a filter response to a random noise signal, where the filter has a magnitude of approximately the spectral envelope in unvoiced bands and approximately zero in voiced bands. The passage nowhere describes or suggests using the filter in conjunction with pulse locations.

The final rejection also indicates that Griffin teaches the determining of spectral and voicing information for frequency bands of a frame at the abstract and col. 5, lines 58-62, and that the determining of voicing information necessarily determines pulse excitation locations. This conclusion by the Examiner is not understood. Moreover, even assuming for sake of

argument that it is correct, it would not lead to the recited use of digital filters in conjunction with the pulse locations since, as noted above, Griffin states that the filter response is to a random noise signal.

Recognizing that Griffin does not describe or suggest determining a set of pulse locations, producing sets of first and second signal samples using the digital filters and the pulse locations, and combining the first and second signal samples to produce digital speech samples, the rejection asserts that doing so was well known, as evidenced by Barnwell. **Applicant notes that in the present action, the Examiner states for the first time that:**

> **Barnwell illustrates (clarifies) the connection between the fundamental frequency (as taught by Griffin) and pulse locations as claimed when used to excite a filter (programmed with spectral information) during a voiced state. Barnwell also illustrates the sequential nature of the process: a first set of spectral coefficients program the first digital filter and when excited produce the first set of digital samples; the second set of spectral coefficients program the second filter and when excited produce the second set of digital samples, etc. These outputs are combined to produce the reconstituted digital signal.**

Applicant has reviewed Barnwell and does not see where Barnwell sets forth the noted illustration and, to the extent that the Examiner continues to maintain that such illustration may be found in Barnwell, applicant requests that the Examiner provide an explanation of where it can be found.

Moreover, even assuming for sake of argument that Barnwell somehow illustrates the points noted by the Examiner, this seems to simply be a repeat of the Examiner's argument in the previous rejection, where the Examiner stated:

> Barnwell teaches the more specific operations of using voicing information along with spectral information (or filter coefficients) to produce the synthesized output (i.e., pulse generator with pitch locations exciting the filter). When Barnwell's teaching are combined with those of Griffin you get "producing of sets of first and second signal samples using the digital filters and pulse locations", and "the recited combining of the first and second signal samples to produce digital speech samples."

As previously noted, applicant strongly disagrees. First, the passage of Barnwell identified in the rejection (pages 85-89) merely describes well known LPC techniques and in no way describes or

suggests the recited producing of sets of first and second signal samples using the digital filters and the pulse locations, or the recited combining of the first and second signal samples to produce digital speech samples. Accordingly, for at least these reasons, the rejection of claim 1 and its dependent claims should be withdrawn.

2. There would have been no motivation to combine Griffin and Barnwell in the manner set forth in the rejection, since Griffin is directed to MBE coder, and Barnwell is directed to a LPC coder, which is a substantially different class of coder.

Griffin and Barnwell are directed to different classes of coders. As such, nothing in Barnwell's description of a LPC coder would have led one of ordinary skill in the art to modify Griffin's MBE coder to produce a coder such as is recited in the claims. Moreover, the rejection does not identify any such motivation. Rather, the rejection merely asserts that it would have been obvious to do so because Barnwell allegedly describes the features missing from Griffin.

While the argument by the Examiner might be said to assert that the motivation to combine the references would come from a desire to reduce the bandwidth required by Griffin's system, there is no indication that such a reduction would result. Indeed, as Griffin's system is already directed to using a low bandwidth (3.6 kbps) system (see col. 5, lines 60-63), it seems likely that attempting to incorporate Barnwell's substantially different approach would result in an increase in the bandwidth requirement.

3. Griffin and Barnwell do not describe or suggest the subject matter of claim 38, which is directed to decoding a stream of bits to produce speech samples corresponding to a subframe by computing impulse responses for the subframe and a previous subframe, and applying pulse locations for the subframe to produce sets of first and second signal samples that are combined to produce the speech samples.

Claim 38 is directed to decoding digital speech samples corresponding to a selected voicing state from a stream of bits. The stream of bits is divided into a sequence of frames that each contain one or more subframes. Speech model parameters are decoded from the stream of bits for each subframe in a frame, with the decoded speech model parameters including at least pitch information, voicing state information and spectral information. A first impulse response is computed from the decoded speech model parameters for a subframe, and a second impulse response is computed from the decoded speech model parameters for a previous subframe. Thereafter, a set of pulse locations is computed for the subframe, and sets of first and second signal samples are produced from the pulse locations and, respectively, the first and second impulse responses.

Griffin and Barnwell fail to describe or suggest the subject matter of claim 38 for the reasons discussed above with respect to claim 1. In addition, neither Griffin nor Barnwell anywhere describes or suggests applying pulse locations for a subframe to an impulse response computed using decoded speech model parameters for the subframe and decoded speech model parameters for a previous subframe. Nor does the rejection provide any indication of where such application may be found in Griffin or Barnwell.

Accordingly, applicant submits that all claims are in condition for allowance.

The fee in the amount of $120 in payment of the one-month extension fee is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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